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Contributions to the cockroach genus *Antitheton* Hebard (Insecta, Blattodea), with confirmation of its familial placement in Pseudophyllodromiidae

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Abstract

Fresh material from the enigmatic and poorly known cockroach *Antitheton iniquiungues* Hebard, 1919, the sole member of the genus *Antitheton* Hebard, 1919, is revised. The male genitalia is examined and illustrated, and since the genital hook is placed on the right side of the genital complex, its placement in the family Pseudophyllodromiidae Hebard, 1929 is confirmed. Given the morphology of the subgenital plate and the extreme modification of the styli, it is comfortably placed in the subfamily Plectopterinae Saussure & Zehntner, 1893.

Keywords

Blaberoidea, neotropical, new record, scientific collections

Introduction

Antitheton Hebard, 1919 is a monotypic genus that holds the species *Antitheton iniquiungues* Hebard, 1919, which was described from two specimens: the holotype, a male from Guatemala (Fig. 1), and a paratype, a female from Veracruz, Mexico (Hebard, 1919). The specific epithet alludes to the asymmetrical tarsal claws, a trait that made Hebard (1919) place it in the subfamily Pseudomopinae alongside *Latiblattella* Hebard, 1917, which also shares this characteristic; this classification was adopted by Princis (1969). Grandcolas (1996) transferred this genus to the family Ectobiidae, which was followed by Beccaloni (2024), who did not place this genus in any subfamily. Years later, Estrada-Álvarez and Sormani (2021) transferred it to the family Pseudophyllodromiidae without any supporting evidence. Specimens of this genus are rarely collected and are thus extremely scarce in collections; until this work, this species was only known by its type material.

By examining the type material as well as freshly collected specimens, the familial placement of this genus of neotropical cockroaches is finally confirmed within the family Pseudophyllodromiidae; because of the morphology of the subgenital plate and the extreme modification of the styli, it is further placed in the subfamily Plectopterinae.

Methods

During a visit in June 2023 to the Colección Nacional de Insectos of the Universidad Nacional Autónoma de México (CNIN-UNAM), the authors examined the specimens of cockroaches (Insecta: Blattodea) deposited there; a male specimen of *Antitheton iniquiungues* was donated by the second author to the collection. It was provisionally mounted with an entomological pin to take photographs (Fig. 2A, B); subsequently, the abdomen was dissected and cleared by submerging it for 15 minutes in 10% potassium hydroxide (KOH) in a *bain-marie* at 70 °C; finally, the different structures were photographed (Figs 2C–G, 3A–G) with a generic brand USB microscope while submerged in 70% ethanol. All images were edited using Photoshop (2020 version).

Abbreviations of the male genitalia follow McKittrick (1964) and Estrada-Álvarez and Sormani (2023):

sap	Supra-anal plate
Rp	Right paraproct
lp	Left paraproct
sgp	Subgenital plate
ap	Apodeme
ls	Left stylus
rs	Right stylus
ip	Interstylar projection
vp	Ventral proyection
L_1	Left sclerite one
L_{1d}	Dorsal subsclerite of L_1

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L_{1v} Ventral subsclerite of L_1
L_{1m} Medial subsclerite of L_1
L_2 Left sclerite two
L_{2d} Dorsal subsclerite of L_2
L_{2vm} Medioventral subsclerite of L_2
L_3 Left sclerite three
a Extension "a" of L_3
b Extension "b" of L_3
R_2 Right sclerite two (genital hook)

Results

Blaberoidea Saussure, 1864
Pseudophyllodromiidae Hebard, 1929
Plectopterinae Saussure & Zehntner, 1893

Antitheton **Hebard, 1919**

Type species.—*Antitheton iniquiungues* Hebard, 1919 (by monotypy).

Antitheton iniquiungues **Hebard, 1919**
Figs 1–4

Material examined.—GUATEMALA • 1 ♂; Cacao, Trece Aguas, Alta Verapaz; 900 feet; 19 April 1906; Barber and Schwarz leg.; pinned with one tegmina and wing spread: Academy of Natural Sciences of Drexel University ANSP (Fig. 1). MEXICO • 1 ♂ Estación de Biología Tropical "Los Tuxtlas", San Andrés Tuxtla, Veracruz, 18.5850, -95.0747; 25 July 2022; collector Manuel de Luna; stored in 70% ethanol (CNIN–UNAM) (Figs 2, 3).

Photographic records.—(MEXICO • Catemaco, Veracruz; 18.4453, -95.0629; 29 May 2022; "*zipactli*" (Jorge Rojas S.) leg.; iNaturalist 119834277 • San Andrés Tuxtla, Veracruz; 18.5852, -95.0744; 11 May 2023; "*deneb16*" (Deneb Ortigosa) leg.; iNaturalist 161910357 • Ixtaczoquitlán, Veracruz; 18.9042, -97.0115; 31 May 2020; "*rossycastaneda1*" leg; iNaturalist 49039637.

Redescription of the genus and species.—Medium-sized cockroach, total length 21–23 mm. Anteroventral margin of fore femora with spination type B_3 *sensu* Roth (2003). Tarsi with asymmetrical claws and well-developed arolia (Fig. 1E). Wings with intercalar triangle (Figs 1A, B, 2A, B). *Male* ♂ (Figs 1–3): Head reddish brown, concolorous. Pronotum oval and bicolor, with lateral margins hyaline; while center, posterior, and a small portion of the anterior margin opaque and reddish brown in color. Tegmina reddish brown, concolorous. Wings reddish brown with anal area being grayish. Mesonotal, metanotal, and abdominal terga bright orange. Legs bicolor (bleached in holotype—Fig. 1): forelegs with distal portion of femora, tibiae, and tarsi black, the rest reddish brown; midlegs and hindlegs with the distal half of the tibia as well as the tarsi black, the rest reddish brown. Abdominal sternites reddish brown, concolorous. Cerci black. Seventh abdominal terguite with tergal gland (Fig. 2C, D). Supra-anal plate triangular, with apex slightly convex, with symmetrical paraprocts (Fig. 2E, F). Subgenital plate with dissimilar apodemes (Fig. 3A). Styli extremely modified, with lateral keels and an interstylar space projected (Figs 2G, 3A–D). Genital sclerites as in Fig. 3E–H. L_1 (first left sclerite) with three subsclerites: L_{1d}, L_{1m}, and L_{1v}; (Fig. 3E): L_{1d} with multi-spined apex; L_{1m} bulbose with minute projections and keels; L_{1v} with a bulbose apex covered in pilose structures. L_2 (second left sclerite) with

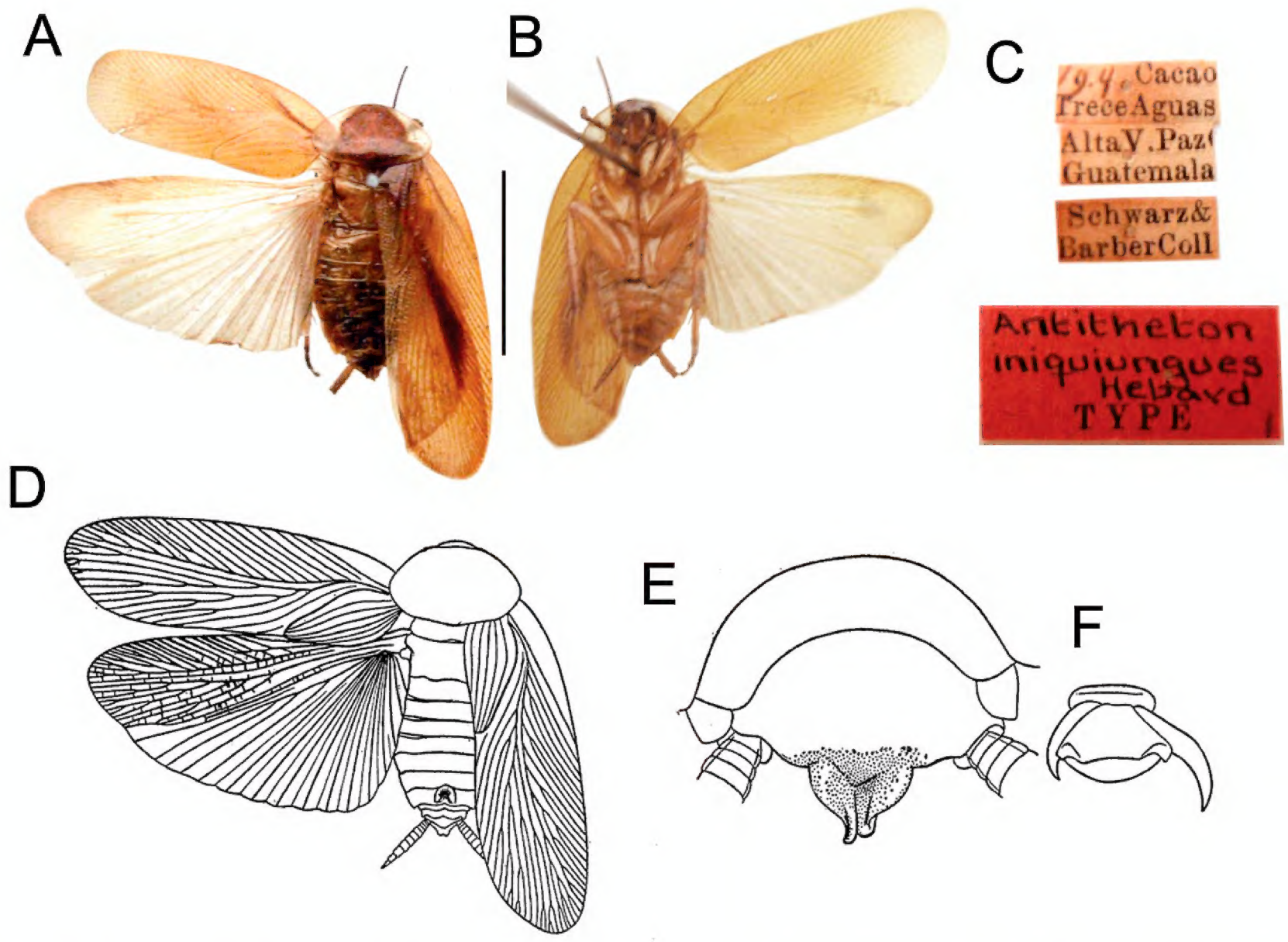

Fig. 1. *Antitheton iniquiungues.* Holotype male ♂ (ANSP) **A.** Dorsal aspect. **B.** Ventral aspect. **C.** Labels associated with the holotype. **D.** Illustration of dorsal habitus of holotype, redrawn from Hebard (1919). **E.** Last abdominal sternite and subgenital plate, redrawn from Hebard (1919). **F.** Apical portion of tarsus, redrawn from Hebard (1919).

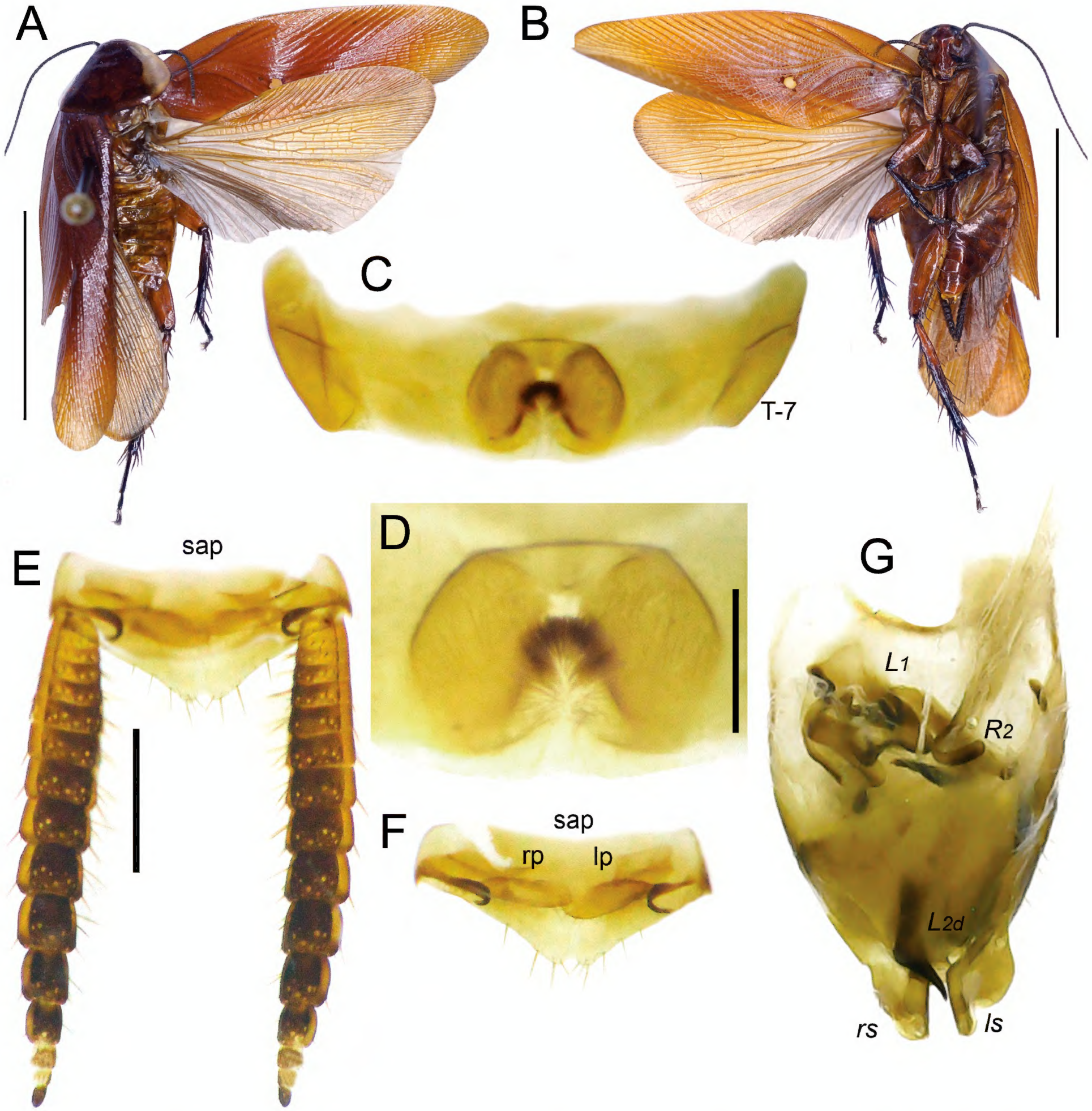

Fig. 2. *Antitheton iniquiungues*. Male ♂ from Los Tuxtlas, Veracruz (CNIN). **A.** Dorsal aspect. **B.** Ventral aspect. **C.** Seventh abdominal terguite. **D.** Close up of tergal gland. **E.** Dorsal aspect of supra-anal plate. **F.** Ventral aspect of supra-anal plate. **G.** Subgenital plate with genitalia still in normal position.

two subsclerites: L_{2d} and L_{2vm} (Fig. 3G): L_{2vm} proximally wider; L_{2d} curved, narrowing distally. L_3 (third left sclerite) with two projections: "a" and "b" (Fig. 3F): "a" apically wider; "b" with spinose apex on retrolateral margin. R_2 (genital hook) thin and long, with a preapical incission and an apical keel (Fig. 3H).

Differential diagnosis.—The size (Figs 1A, B, 2A, B), the presence of a tergal gland in the male sex (Fig. 2C, D), the morphology of the styli (Fig. 3B), and L2 (Fig. 3E) differentiate this genus from the rest of the subfamily.

Distribution.—Mexico: Veracruz (Hebard, 1919) and Guatemala (Hebard, 1919) (Fig. 4).

Discussion

Since the genital hook (R_2) is placed on the right side of the genital complex, the genus *Antitheton* is confirmed to belong to the family Pseudophyllodromiidae, as proposed by Estrada-Álvarez and Sormani (2021). Based on the morphology of the subgenital plate, especially the extreme modification of the styli, it is placed in the subfamily Plectopterinae alongside *Aglaopteryx*, *Chorisoneura*, *Dendroblatta*, *Euphyllodromia*, *Macrophyllodromia*, *Riatia*, and *Plectoptera*.

Antitheton iniquiungues had been previously recorded for Guatemala, specifically in the department of Alta Verapaz (Cacao, Trece Aguas), and Mexico, in the state of Veracruz (Santa Lucrecia, Jesús Carranza). With the new records hereby provided,

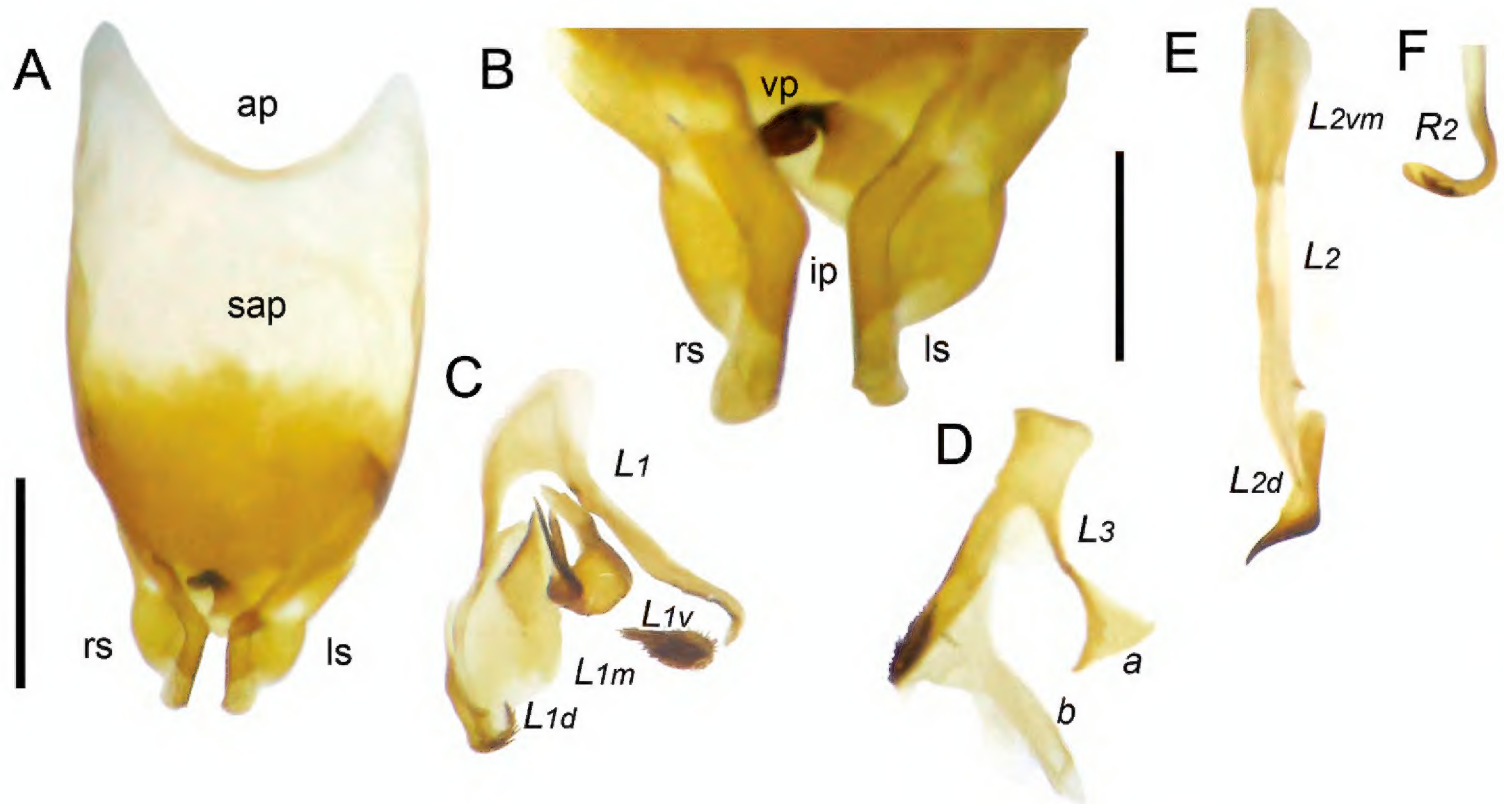

Fig. 3. *Antitheton iniquiungues*. Male ♂ from Los Tuxtlas, Veracruz (CNIN). **A.** Ventral aspect of subgenital plate. **B.** Detail apical portion of subgenital plate. **C.** Sclerite L_1. **D.** Sclerite L_3. **E.** Sclerite L_2. **F.** Sclerite R_2.

it is recorded in a new locality in the state of Veracruz: Estación de Biología Tropical "Los Tuxtlas," in San Andrés Tuxtla. Additionally, there is a photographic record from Costa Rica of a cockroach that clearly belongs to this genus (iNaturalist, 2024); this would be its southernmost record, but specimens need to be collected in order to confirm its presence in this country.

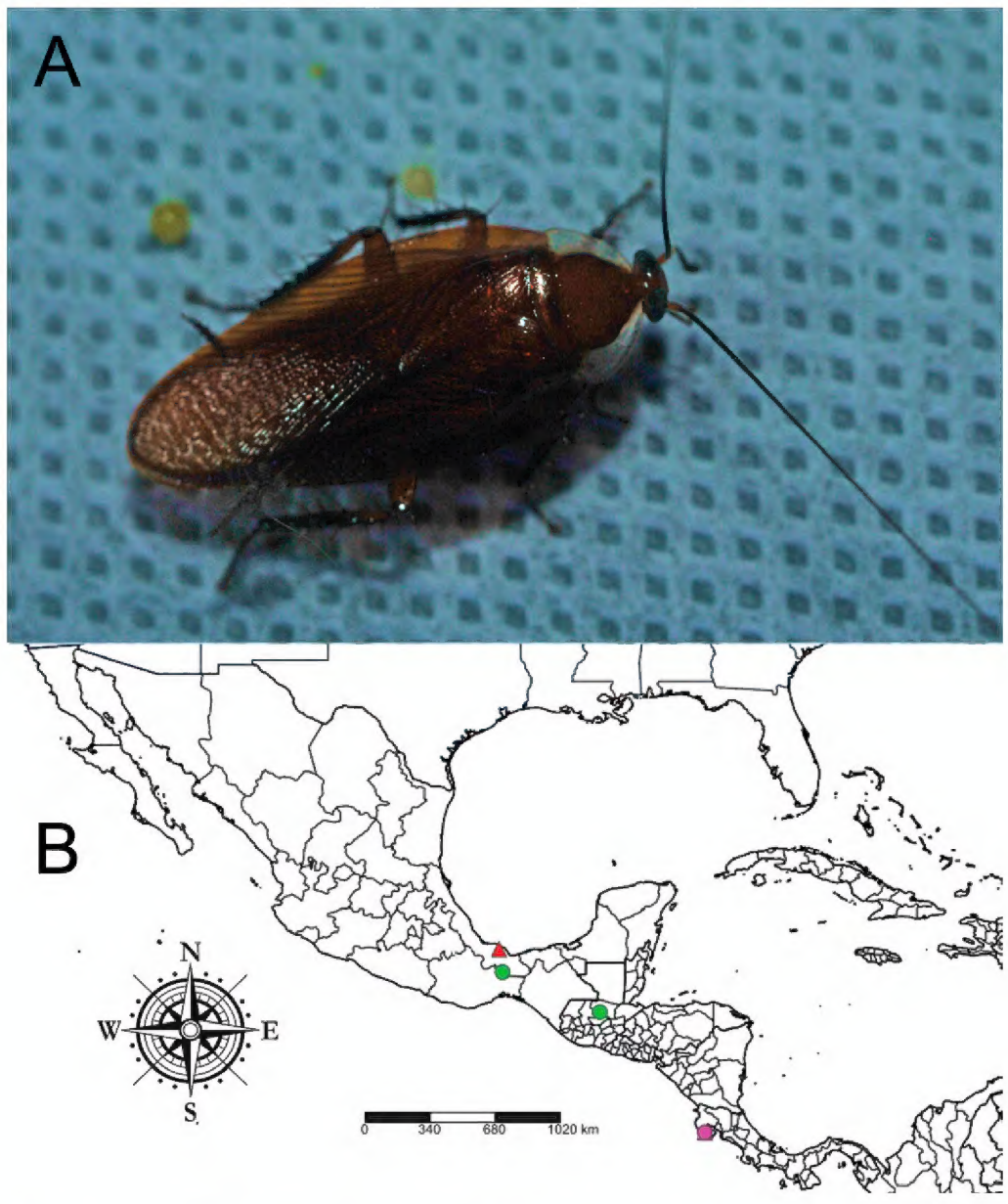

Fig. 4. *Antitheton iniquiungues*. **A.** Male from Catemaco, Veracruz, Mexico; attracted to light; photo by "zipactli" (Jorge Rojas S.). **B.** Known distribution: red triangle corresponds to the new locality record, green circles correspond to previous records (Hebard, 1919), pink circle corresponds to a record that needs confirmation (iNaturalist 2024).

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